Grade 5
Title: Marsh Grass
Sarah Masters

Student Learning Objective(s): The students will use experimental data to construct an appropriate graph. From patterns in the graph/data, the students will compare the survival rate of young organisms with and without marsh grass.
LA GLE's Grade: 5   # 11 : Construct, use, and interpret appropriate graphical representations to collect, record, and report data (e.g., tables, charts, circle graphs, bar and line graphs, diagrams, scatter plots, symbols) (SI-M-A4) Grade: 5   # 13 : Identify patterns in data to explain natural events (SI-M-A4) Grade: 5   # 26 : Identify and describe ecosystems of local importance (LS-M-C3)
Materials needed: Each pair needs: • 1 pair of tweezers or forceps • Ziplock bag of 50 colored paper squares 1 cm x 1 cm (2 colors, 25 of each color) • Small box of "grass" (half of a styrofoam to-go box with grass cut from paper, see attached for a diagram) • Flat cloth surface (rag in other half of styrofoam box—this makes the squares easier to pick up than on a slick flat surface) • 1 Data Table • 2 sheets of graph paper

Detailed Procedure. *Describe what the students will do in each stage. Include guiding questions you might ask to help students.*
 	
   1. Engage:
Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*
☐ Observation   ☐ Classification ■ Communication   ☐ Measurement   ☐ Estimation   ■ Prediction   ☐ Inference
☐ Identifying Variables   ☐ Controlling Variables   ☐ Defining Operationally   ☐ Forming Hypotheses
☐ Experimenting   ☐ Graphing   ☐ Modeling
 	
1. The teacher will show pictures of Louisiana marsh land. The teacher will ask, "What are the main features you notice about marshes?" (water, grasses) The teacher will ask, "Do you know how these things help animals?"
2. The teacher will introduce the activity, "Today you are going to be predators. Your prey are juvenile species (infant shrimp, red drum, etc.). You are going to get a bag of 50 squares that will represent your prey. With your prey spread out over a flat surface, you are going to have 30 seconds to captures as many as you can. BUT, the rules are that you can only capture one at a time, you can only use one hand, and you have to capture them using a pair of tweezers. How many do you think you will be able to pick up?"
 	
   2. Explore:
Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*
☐ Observation   ☐ Classification ■ Communication   ☐ Measurement   ☐ Estimation   ☐ Prediction   ☐ Inference
☐ Identifying Variables   ☐ Controlling Variables   ☐ Defining Operationally   ☐ Forming Hypotheses
■ Experimenting   ☐ Graphing   ☐ Modeling
 	
1. The students will work with partners. Each pair will receive their materials. Teacher will be giving directions/monitoring student activity.
2. One partner will drop the colored squares onto their flat cloth surface.
3. They will have 30 seconds to pick up as many of the squares as they can, using only the tweezers. Students may only pick up one square at a time. Time will be kept by the teacher.
4. Students will count and record the number that they (or their partner) picked up on their data table.
5. Students will exchange materials so that the other partner can do steps 3-4.
6. One partner will drop the colored squares onto the "grassy" surface.
7. They will have 30 seconds to pick up as many of the squares as they can, with the same rules as before.
8. Students will count and record the number that they picked up on their data table.
9. Students will exchange materials so that the other partner can do steps 6-8
10. The group will calculate how many organisms survived each predator [total number of organisms (50) minus the number eaten].

11. The students will work with their groups to develop an appropriate graph to represent their data- focusing on the average number of organisms that survived each attack.
12. Students' graphs will be displayed in front of the class.

3. Explain:
Outline the line of questioning you will use to assist students in understanding the concept. List <u>at least 5 good questions</u>.

Questions for discussion:
1. When did the most organisms survive?
2. Why were you unable to capture as many organisms in the grasses?
3. What is an important feature of marshes? (grasses)
4. How are the grasses beneficial for organisms? (breeding ground/safe place for baby organisms to develop)
5. How did you decide what type of graph to use?
6. Did everyone create their graph the same way?
7. Would another type of graph work for this type of data?
8. What trend did you notice in your graph/in the class's graphs?
9. How do the graphs support our conclusions about marshes?

Extension questions (not specifically related to objectives of the lesson, will be used to challenge the students thinking):
10. As we conducted our experiment/trials, what was our independent variable (what did we change)?
11. What was the dependent variable? (What happened/changed because we changed the type of surface?)
12. What did we keep constant/the same? (amount of time, original number of organisms, method of capturing organisms- one at a time and only using tweezers)
13. We only counted the total number of organisms that survived. Is there another way we could have looked at the organisms? (how many of each color/type survived)

4. Expand:
Science Process Skills *Indicate which science process skills students will develop in this part of the lesson.*
☐ Observation   ☐ Classification ■ Communication   ☐ Measurement   ☐ Estimation   ☐ Prediction   ☐ Inference
☐ Identifying Variables   ☐ Controlling Variables   ☐ Defining Operationally   ☐ Forming Hypotheses
☐ Experimenting   ■ Graphing   ☐ Modeling

1. The teacher will challenge the students to create a different type of graph from the one they did in the explore phase. The two most obvious ways to display the information are a double bar graph and a pictograph. Students can either create the one of these two that they did not make before, or they may be challenged to think of a way to display the information using a circle graph (depending on the students' ability level)
2. The teacher will ask, "Was creating a second graph easier or more difficult that creating the first graph? Why?"
3. The teacher will ask, "What did you have to do to the data to be able to make a circle graph?"

5. Evaluate:
What exactly will you do, or what evidence/data will you collect, to ascertain whether the students can achieve the objectives you listed at the top of this lesson?

The teacher will evaluate students' understanding throughout the lesson:
Engage: The teacher will assess students' prior knowledge.
Explain: The teacher will assess students' understanding of the activity based on their responses to questions and their ability to explain and interpret the results of the activity.
Expand: The teacher will assess students' ability to use the data from the activity to create an appropriate graph. The teacher will also evaluate students' explanations of their graphs to determine the level of their understanding.

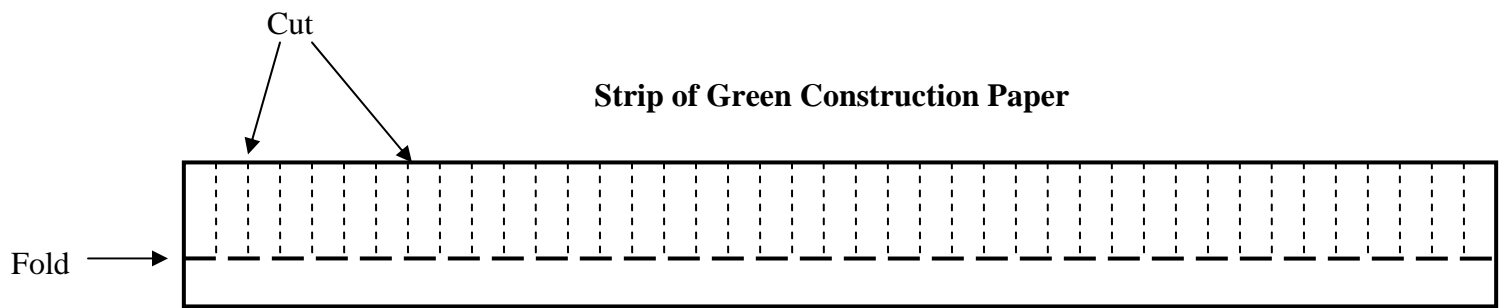**Brain Compatible Learning Strategies Used in This Lesson:**
■ Brainstorming/Discussion ■ Drawing and Artwork   ☐ Field Trips   ☐ Games   ■ Graphic Organizers
☐ Humor   ■ Manipulatives, Experiments, Labs, Models   ☐ Metaphors, Analogies, and Similes
☐ Mnemonic Devices   ☐ Movement   ☐ Music, Rhythm, Rhyme, and Rap   ☐ Project/Problem-Based Instruction
☐ Reciprocal Teaching, Cooperative Learning   ☐ Role Plays, Drama, Pantomimes   ☐ Storytelling
☐ Technology (student use) ☐ Visualization/Guided Imagery   ☐ Visuals   ☐ Writing/Journals
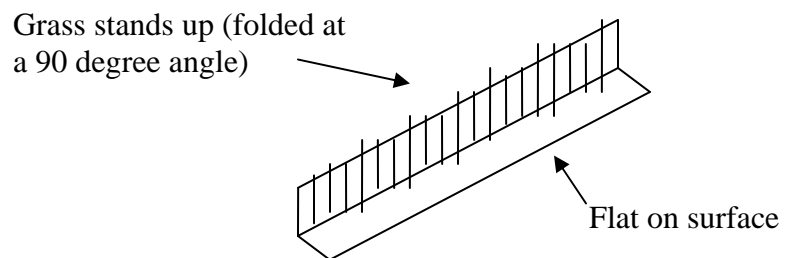
Lesson Source:

Townson, M. A. *Beneficial functions of the wetlands*. Retrieved March 31, 2009, from The Fragile Fringe: A Guide for Teaching About Coastal Wetlands Website: http://www.lacoast.gov/education/FragileFringe/

function.htm

GRASS SURFACE DESIGN

Cut

Strip of Green Construction Paper

Fold →

One Folded Strip

Grass stands up (folded at
a 90 degree angle)

Flat on surface

In box or on other flat surface, line up multiple strips of grass to desired size.
Tape the strips along the flat flap. The closer strips are placed, the thicker the grass will be.
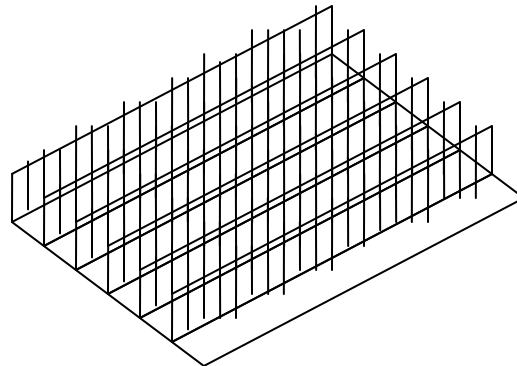
Group Members: _____

DATA RECORDING SHEET

Number of Organisms Eaten

Predator Name	Attack 1 (no grass)	Attack 2 (grass)

Number of Organisms that Survived

Predator Name	Attack 1 (no grass)	Attack 2 (grass)

Group Members: _____

DATA RECORDING SHEET

Number of Organisms Eaten

Predator Name	Attack 1 (no grass)	Attack 2 (grass)

Number of Organisms that Survived

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